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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] the thing concerning [ this invention ] the masking tape for paint, or a sheet -- it is -- the time of the paint in respect of [ detailed / like the bumper of an automobile, or the tank of a motorcycle ] a curve -- it sets to \*\*\*\* (parting line) and is related with a useful masking tape or a useful sheet.

[0002]

[Description of the Prior Art] In the case of paint, such as an automobile, the masking tape for abandonment is used for the boundary line of a color, it is curving like especially the tank of a bumper or a motorcycle, or the thing using the elasticity vinyl chloride which was excellent in flexibility as a base material is used abundantly in the irregular covering side.

[0003]

[Problem(s) to be Solved by the Invention] Although what used the elasticity vinyl chloride as a base material was conventionally used as the above-mentioned masking tape, since chlorine gas would occur if it burns in case it discards after use, the thing using an elasticity vinyl chloride remained as it was, and could not be incinerated, but had the trouble that it was necessary to form the equipment for chlorine escapes of gas in an incinerator for this reason. For this reason, conversion into the ingredient which can be incinerated is called for.

[0004] A polyolefine system ingredient is mentioned to a thing useful as alternate material of such an elasticity vinyl chloride. However, generally, with a polyolefine system ingredient, when it was pulled so that polyethylene etc. may see, the local vena contracta called "necking" arose and there was a trouble that a straight parting line was not obtained. Moreover, with polypropylene, in addition to "necking", since flexibility was low, there was a fault of being hard to follow the irregularity of a covering side.

[0005] It was difficult to obtain a good parting line to a covering side with the above irregularity in the masking tape which adopted the conventional polyolefine system base material film because of the above reasons.

[0006] The purpose of this invention cancels the above-mentioned technical problem, and is to offer a masking tape for paint or a sheet with which flattery nature can recuperate itself well, and a good parting line is obtained to a covering side with curved irregularity like the bumper of an automobile, or the tank of a motorcycle.

[0007]

[Means for Solving the Problem] this invention person etc. succeeded in the above-mentioned technical problem being attained by the following this inventions, and completed this invention. That is, this invention has the following summary.

A hard segment and a soft segment are contained. This hard segment (1) Polypropylene, This soft segment consists of ethylene and ethylene, and a copolymerizable monomer. The masking tape for paint or sheet characterized by having a binder layer on one side of a base material which has a copolymer, (2) The copolymerizable monomer in a soft segment Formula  $CH_2 = CHR$  The alpha olefin expressed with

30-300 : 100

(however, R shows the aliphatic series radical or aromatic series radical of carbon numbers 1-8), And/or, the above which is diene (1) The masking tape for paint or sheet of a publication, (3) The above whose soft segment is resin by which 30-300 weight section content is carried out to the hard segment 100 weight section, (1) Or (2) The masking tape for paint or sheet of a publication, (4) -- 150 degrees C -- 1 hour -- warming -- in the flow direction of a base material, and the cross direction, the rate of a dimensional change of a next base material The above which is 20% or less at least in one side (1) - (3) The masking tape for paint or a sheet given in either, (5) -- 10% modulus of a base material -- 0.3-4.0kgf/mm<sup>2</sup> it is -- the above (1) - (4) the masking tape for paint given in either, or a sheet -- (6) Above (1) - (5) The above which is the thing which comes to carry out a laminating to the base material of a publication in thermoplastics further (1) - (5) It is related with the masking tape for paint or a sheet given in either.

[0008] The above-mentioned base material consists of a hard segment and a soft segment, and this hard segment is formed with polypropylene and the copolymer with which this soft segment serves as ethylene and ethylene from a copolymerizable monomer.

[0009] It is desirable to use at least one kind in the alpha olefin and diene which are expressed with formula  $\text{CH}_2=\text{CHR}$  (however, R shows the aliphatic series radical or aromatic series radical of the straight chain of carbon numbers 1-8 or branched chain) as a copolymerizable monomer.

[0010] As the above-mentioned alpha olefin, butene-1, a pentene -1, 4-methyl pentene -1, a hexene -1, octene -1, styrene, etc. are illustrated as a suitable thing.

[0011] Moreover, as a diene compound, a butadiene, 1, 4-hexadiene, 1, 5-hexadiene, ethylidene, norbornene diene, etc. are illustrated as a suitable thing.

[0012] As for the hard segment and soft segment in resin, it is desirable that compatibility exists in the good condition, and according to this, a film splits, a sex and stress relaxation nature become good, and it is desirable in respect of workability or detachability. The condition that a hard segment and a soft segment join together by block copolymerization, and exist in the same molecule as a condition with compatibility good [ above ], the condition that accomplish structure like IPN (mutual invasion mesh; interpenetrating polymer network) structure, and compatibility exists in the good condition, etc. are illustrated.

[0013] the content of a soft segment -- the hard segment 100 weight section -- receiving -- the 30 - 300 weight section -- the 40 - 200 weight section is preferably suitable. If it is in the inclination for flexibility to fall that the content of a soft segment is under 30 weight sections, and to be easy to split and the 300 weight sections are exceeded, there must not be no inclination for the effect of rubber elasticity to become excessive and for the workability at the time of exfoliation to worsen.

[0014] As for the polymer which constitutes the above-mentioned hard segment or a soft segment, a gay, a block, or a random thing is illustrated.

[0015] Still more nearly another proper resin is mixed to the above-mentioned resin, and you may make it acquire a desired base material property by this to it. For example, the elastic modulus of a base material can be increased by mixing resin, such as polypropylene, further to the resin which has a hard segment which was described above, and a soft segment.

[0016] One sort in ultraviolet ray absorbents, such as antioxidants, such as minerals bulking agents, such as titanium oxide, a zinc oxide, and a calcium carbonate, an amine system, a quinoline system, a hydroquinone system, a phenol system, and a phosphite system, and an anti-oxidant, salicylic acid derivatives, a benzophenone system, a benzotriazol system, a hindered amine system, lubricant, a plasticizer, etc. or two sorts or more may be blended with the above-mentioned resin in the range which is not contrary to the main point of this invention if needed.

[0017] A masking tape is warmed at the temperature of dozens-200 degrees C after the coating of a coating in a drying tower. Therefore, even if this base material receives the heat history, what has few dimensional changes, such as contraction and expansion, is desirable. One [ at least ] rate of a dimensional change of the flow direction (henceforth the direction of MD) of a base material after warming a base material at 150 degrees C for 1 hour, and the cross direction (henceforth the direction of TD) is desirable, and, specifically, 0 - 10% of thing is used especially preferably 20% or less. When the

rate of a dimensional change exceeds 20%, it is in the inclination which un-arranging according to contraction of a base material, such as a float of a terminal and poor sacrifice, produce.

[0018] the base material which measured the dimension of the direction of MD, and the direction of TD beforehand with the above-mentioned rate of a dimensional change -- the inside of 150-degree-C oven -- 1-hour neglect and warming -- carrying out -- warming -- the back and warming -- the difference of a dimension with a front -- warming -- it is the value which ~~is~~ (ed) with the front dimension.

[0019] moreover, 10% modulus (speed-of-testing 300mm/min.) in the viewpoint of curved-surface attachment nature and dimensional stability in the above-mentioned base material to 23 degree-Cx65% RH (relative humidity; relative humidity) -- usually -- desirable -- 0.3-4.0kgf/mm<sup>2</sup> -- especially -- desirable -- 0.8-2.3kgf/mm<sup>2</sup> The thing of the range is used. 10% modulus is 2 0.3 kgf/mm. In the following, it is too flexible and lacking in the dimensional stability of the tape width by the tension in the case of attachment, and pasting workability is bad, and is in the inclination for the abandonment nature made into the purpose not to be obtained, and it is 2 4.0 kgf/mm. If it exceeds, required flexibility will not be acquired, but according to a bend or concave heights, it is hard to stick and you must not be in the inclination for the abandonment nature made into the purpose not to be obtained. The 10% modulus concerned is performed according to the tensile strength of JISZ-0237, and the test method of elongation by RH 23 degree-Cx65%, and measures the value at the time of 10% elongation.

[0020] As for this base material, the laminating of the other thermoplastics may be further carried out for amelioration of piece nature, the rewinding nature of a tape, and dimensional stability.

[0021] As the above-mentioned thermoplastics, polyolefine systems, such as a polyethylene, polypropylene, ethylene-vinylacetate copolymer, and ethylene-ethyl acrylate, a polyester system, a nylon system, etc. are mentioned. Especially, the polyolefine which comes to contain polypropylene from the point of adhesion with the base material concerned more than 30 weight sections is used suitably.

[0022] As a binder which constitutes the above-mentioned binder layer, for example An acrylic binder, A natural rubber system binder, SIS (styrene isoprene block copolymer: styrene isoprene block copolymer), SBR (styrene butadiene rubber: styrene butadienerubber), Or IR (polyisoprene rubber: isoprene rubber), The mixed stock of synthetic-rubber system binders, such as PIB (polyisobutylene: polyisobutylene) and IIR (isobutylene isoprene rubber: isobutylene-isoprenenerubber), or a natural rubber system, and a synthetic-rubber system etc. is mentioned. Especially, an acrylic binder and a natural rubber system binder are suitably used from the point of having a high coherent property.

[0023] In addition, the thickness of the above-mentioned base material usually has 5-100-micrometer 10-50 micrometers preferably suitable for the thickness of about 60-200 micrometers and the above-mentioned binder layer. If the thickness of a binder layer is less than 5 micrometers, and target adhesion will not be acquired, but it will be in the inclination a "float" and "peeling" become easy to produce in this tape or a sheet and it will exceed 100 micrometers on the other hand, don't be in the inclination for adhesion to be too strong and for removability to worsen.

[0024] The approach currently generally used conventionally can be used as an approach of applying a binder to a base material, for example, the ~~en~~ method, the roll coater method, the reverse coating-machine method, a doctor blade method, etc. can be used.

[0025]

[Example] An example is given to below and this invention is more concretely explained to it. In addition, this invention is not limited to these examples from the first.

[0026] the resin ( MFR [ by trade name KS-021:Himont ] (melt flow rate), and consistency 0.7 g/cm<sup>3</sup>) 70 weight section which has the hard segment 55 weight section which consists of example 1 polypropylene, and the soft segment 45 weight section which consists of ethylene propylene rubber -- a consistency -- 0.924 g/cm<sup>3</sup> it is -- extrusion molding of what mixed the low-density-polyethylene (MFR1.5) 30 weight section was carried out, and the base material with a thickness of 100 micrometers was produced. 10% modulus of this base material -- 0.94kgf/mm<sup>2</sup> it is -- the rate of a dimensional change of 150 degree C and 1 hour after was 3% in the method of TD 4% in the direction of MD. Subsequently, corona discharge treatment was performed to both sides of this base material, the acrylic

binder with a thickness of 15 micrometers was applied to one side of this processing side, the backing layer of a long-chain alkyl system has already been formed in one side, and the masking tape was produced.

[0027] The base material was produced like the example 1 except [ all ] KS-021 changing into the resin with which 80 weight sections and straight chain low density polyethylene consist of 20 weight sections as resin which constitutes example 2 base material. 10% modulus of this base material -- 1.0kgf/mm<sup>2</sup> it is -- the rate of a dimensional change of 150 degree C and 1 hour after -- the direction of MD, and the direction of TD -- also in any, it was 3%.

[0028] The base material was produced like the example 1 except [ all ] having the two-layer laminated structure of the A horizon which consists of a resin presentation of the above-mentioned example 1 the resin which constitutes example 3 base material and whose thickness is 70 micrometers, and a B horizon with a thickness of 30 micrometers it is thin from the conversion polyethylene (yes, milan 1605 MFR2.8) containing a carboxyl group. 10% modulus of this base material -- 1.3kgf/mm<sup>2</sup> it is -- the rate of a dimensional change of 150 degree C and 1 hour after was 2% in the direction of TD 1% in the direction of MD.

[0029] The base material was produced like the example 1 except [ all ] changing into gay polypropylene (MFR3.0g / 10 minutes, and consistency 0.90 g/cm<sup>3</sup>) the resin which constitutes example of comparison 1 base material. 10% modulus of this base material -- 4.9kgf/mm<sup>2</sup> it is -- the rate of a dimensional change of 150 degree C and 1 hour after -- the direction of MD, and the direction of TD -- also in any, it was 1%.

[0030] The base material was produced like the example 1 except [ all ] changing into low density polyethylene (MFR1.5g / 10 minutes, and consistency 0.924 g/cm<sup>3</sup>) the resin which constitutes example of comparison 2 base material. 10% modulus of this base material -- 0.88kgf/mm<sup>2</sup> it is -- since contraction of a base material was intense, the rate of a dimensional change of 150 degree C and 1 hour after was not able to be measured.

[0031] About each of the masking tape produced in the example of experiment 1 (evaluation of masking tape) above-mentioned examples 1-3, and the examples 1-2 of a comparison, when evaluated in respect of adhesion, 100R curved-surface attachment nature, abandonment nature, and adherend stain resistance, the result shown in Table 1 was obtained.

[Adhesion] According to the test method of JISC-2107, the exfoliation force was measured in the temperature of 23 degrees C, 65% of humidity RH, 2kg platen 1 of sticking-by-pressure loads round trip, and speed-of-testing 300 mm/min.

[100R curved-surface attachment nature] The circle of 100phi was drawn on the melamine paint plate, and the masking tape was stuck on it in accordance with the periphery. In accordance with \*\* and a periphery, attachment made the difficult thing x for that in which, as for the criteria of evaluation, Siwa and a float generated O and a little what was able to be stuck in accordance with the periphery and did not have Siwa and a float.

[\*\*\*\*\*] The masking tape produced above was stuck on the melamine paint plate, with the spray gun, the urethane system coating (urethane No.[ high ] 5000: Nippon Oil & Fats Co., Ltd. make) diluted with thinner was sprayed on it so that thickness might be set to 30 micrometers, and the tape was exfoliated after cooling even in ordinary temperature after 30-minute desiccation at 70 degrees C. The plainness of a parting line and the linearity of a parting line were investigated visually. The enter lump of the coating to O and the tape pasting section was seen a little in that from which the clear parting line was obtained, the criteria of evaluation had the intense enter lump of the coating to \*\* and the tape pasting section in what has the not not much clear parting line, and the parting line made the not clear thing x.

[0032]

[Table 1]

		粘着力 (g/15mm)	100R曲面 貼り性	見切り性
実施例	1	210	○	○
	2	230	○	○
	3	270	○	○
比較例	1	340	×	○
	2	170	○	×

[0033]

[Effect of the Invention] In case the masking tape or sheet of this invention is stuck to the covering side which has irregularity like the bumper of an automobile, or the tank of a motorcycle especially, it is excellent in curved-surface flattery nature, and has become what has few generating of Siwa, a float, etc. Furthermore, the plainness of the parting line at the time of paint and linearity are good.

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[Translation done.]